

WAN Optimization

Enterprises deploying FortiOS to protect traffic between locations or via the cloud can leverage WAN optimization to provide fast and secure application responses.

Centralize without compromising your WAN performance

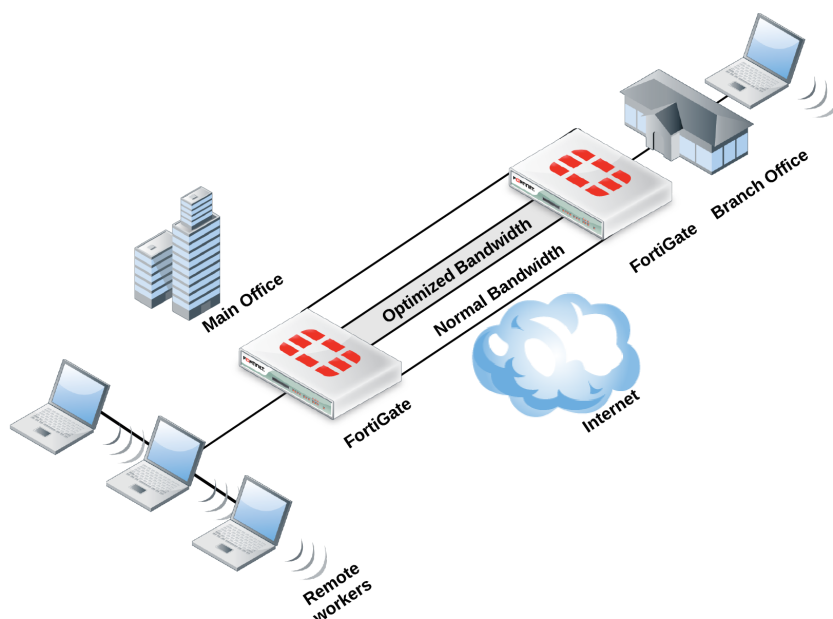
Many multi-location enterprise environments reduce costs and consolidate resources by centralizing applications or providing applications in the cloud. Efficient and high-speed communication between applications and their users is critical. Remote sites don't always have access to high bandwidth, but users at all sites expect consistent network performance. Minimizing user impact and improving performance is especially vital when applications designed for local area networks (LANs) are on the cloud.

Even applications that work fine on a local LAN, such as Windows File Sharing (CIFS), email exchange (MAPI), and many others, suffer from bandwidth limitations and latency issues when accessed over a wide area network (WAN). This results in a loss of productivity and a perceived need for expensive network upgrades. FortiOS's WAN Optimization provides an inexpensive and easy to deploy solution.

FortiOS is commonly deployed in central offices, satellite offices, and in the cloud to provide secure communications across a WAN using IPsec or SSL VPN. This installed infrastructure can be leveraged to add more value by using WAN Optimization to secure WAN traffic.

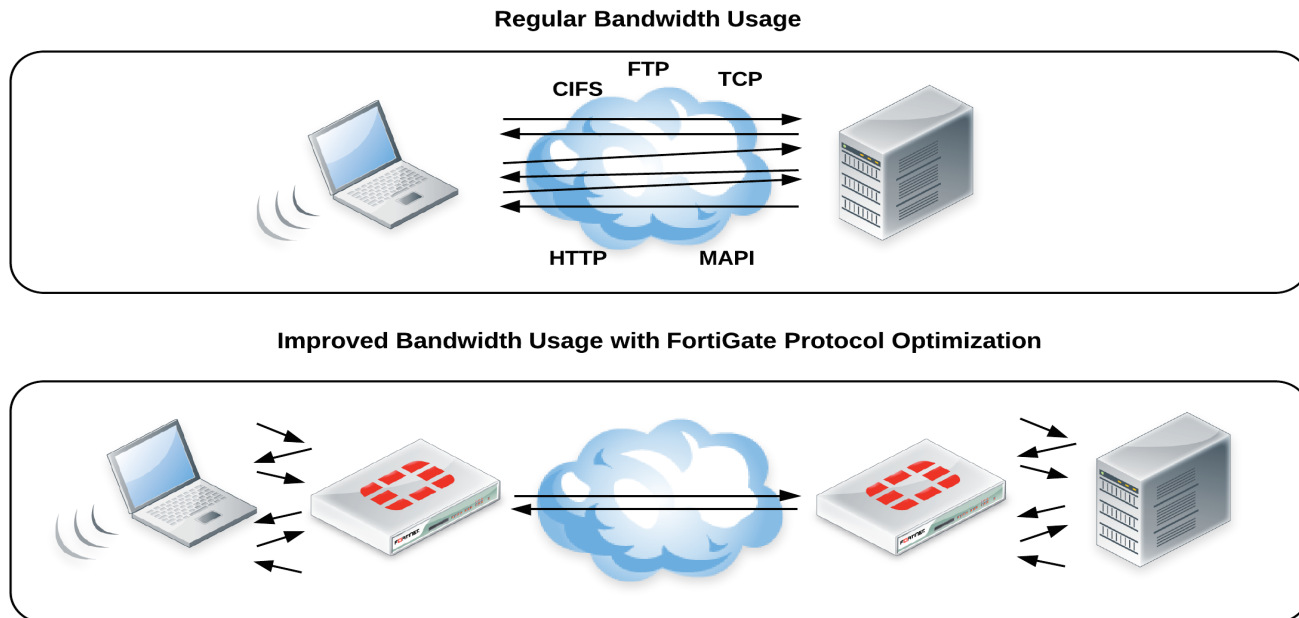
FortiOS WAN Optimization

FortiOS includes license-free WAN Optimization on most current FortiGate devices. Multi-location organizations or businesses using the cloud can now provide WAN Optimization using FortiOS. WAN Optimization is a comprehensive solution that maximizes your WAN performance and provides intelligent bandwidth management and unmatched consolidated security performance. WAN Optimization reduces your network overhead and removes unnecessary traffic for a better overall performance experience. Efficient use of bandwidth and better application performance will remove the need for costly WAN link upgrades between data centers and other expensive solutions for your network traffic growth.



Protocol optimization

Protocol optimization is effective for applications designed for the LAN that do not function well on low bandwidth high latency networks. FortiOS protocol optimization improves the efficiency of CIFS, FTP, HTTP, MAPI, and general TCP sessions.



For example, CIFS, which is a fairly “chatty” protocol, requires many background transactions to successfully transfer a single file. When transferring the file, CIFS sends small chunks of data and waits sequentially for each chunk’s arrival and acknowledgment before sending the next. This large amount of request/acknowledgement traffic can delay transfers. FortiOS CIFS WAN Optimization removes this chattiness and gets on with the job of transferring the file.

TCP protocol optimization uses techniques such as SACK support, window scaling and window size adjustment, and connection pooling to remove common WAN TCP bottlenecks.

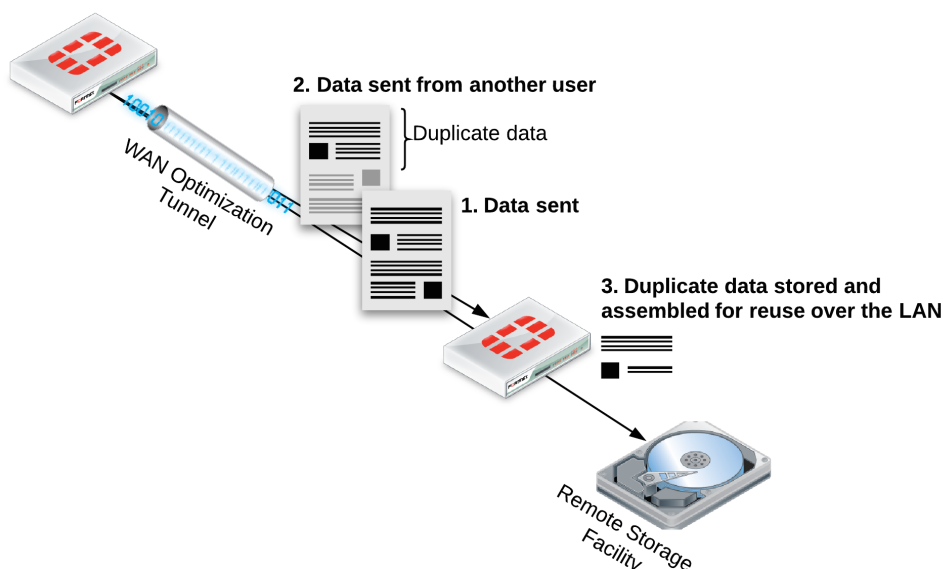
Web caching

In a multi-location environment, multiple users at each location will often want to look at the same content (for example, a sales spreadsheet or a corporate presentation). Each time a user gets information from the central file repository, it uses precious resources as the file is downloaded over the WAN. FortiOS WAN Optimization reduces download times by adding web caching to WAN Optimization tunnels. Web caching stores remote files and web pages on local FortiGate devices for easy local access to repetitively accessed files. There is zero impact on the WAN, resulting in reduced latency for the file requester.

FortiOS Web Caching also recognizes requests for Windows or MS-Office updates and downloads the new update file in the background. Once downloaded to the cache, the new update file is available to all users and all subsequent requests for this update are rapidly downloaded from the cache.

Byte caching

Byte caching improves caching by accelerating the transfer of similar, but not identical content. Byte caching accelerates multiple downloads of different email messages with the same corporate disclaimer by downloading the disclaimer over the WAN once and then downloading all subsequent disclaimers from a local FortiGate unit. Byte caching reduces the amount of data crossing the WAN when multiple different emails with the same or similar attachments or different versions of an attachment are downloaded from a corporate email server to different locations over the WAN.



Data Deduplication

Byte caching breaks large units of application data, like an email attachment or a file download, into manageable small chunks of data. Each chunk of data is labeled with a hash, and chunks with their respective hashes are stored in a database on the local FortiGate unit. When a remote user request a file, the WAN Optimization sends the hashes, rather than the actual data. The FortiGate unit at the other end of the WAN tunnel reassembles the data from its own hash database, only downloading chunks that it is missing. Deduplication, or the process of eliminating duplicate data, will reduce space consumption.

In addition to reducing the amount of data downloaded across the WAN, byte caching is not application specific and assists by accelerating all of the protocols supported by WAN Optimization.

Dynamic data chunking

Dynamic data chunking detects and optimizes persistent data chunks in changed files or in data embedded in traffic that uses an unknown protocol. For example, dynamic chunking can cache data in Lotus notes traffic and make the data chunks available for email and other protocols.

SSL acceleration

SSL is used by many organizations to keep WAN communications private. WAN Optimization boosts SSL acceleration properties of FortiGate FortiASIC hardware by accelerating SSL traffic across the WAN. The FortiGate unit handles SSL encryption/decryption for corporate servers providing SSL encrypted connections over the WAN.

VPN replacement

FortiOS WAN optimization supports secure SSL-encrypted tunnels between FortiGate units on the WAN. Employing secure WAN Optimization tunnels can replace IPsec VPNs between sites. The result is a single, relatively simple configuration that supports optimization and privacy of communication across the WAN and uses FortiGate SSL acceleration to provide high performance.

Road warriors and home workers

The drive to give employees greater flexibility and reduce operational costs has led to more remote workers, both at home and on the road. Whether accessing the office from a hotel, public wireless hotspot, or home, the problem is the same: low bandwidth and high latency harming application performance. WAN Optimization is integrated into FortiClient, which can be installed on PCs and wireless devices to optimize communication between remote workers and their offices.

Reduce your...

- **Capital outlay** - Organizations only need to purchase a single device per location.
- **Licensing costs** - WAN Optimization is included with FortiOS. Additional licenses are not needed.
- **Network complexity** - Small offices that may not have the space or power connections for multiple devices do not need to worry: no additional devices are required.